BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF NEBRASKA

In the Matter of the Application of	**)**	
Black Hills/Nebraska Gas Company, LLC	**)**	**Application No. NG-0086**
d/b/a Black Hills Energy for Approval of	**)**	
its Cost of Service Gas Hedge Agreement with	**)**	
Black Hills Utility Holdings, Inc.	**)**	

REBUTTAL TESTIMONY OF

JULIA RYAN

On Behalf of Black Hills/Nebraska Gas Utility Company, LLC, d/b/a Black Hills Energy
And
Black Hills Utility Holdings, Inc.

March 29, 2016

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Exhibits

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Julia M. Ryan and I am Managing Director of Aether Advisors LLC. My business address is 716 Boylston Ave E. Suite 10, Seattle WA, 98102.

Q. FOR WHOM ARE YOU TESTIFYING?

A. I am testifying on behalf of Black Hills/Nebraska Gas Utility Company, LLC (the "Company").

Q. ARE YOU THE SAME JULIA M. RYAN THAT PROVIDED DIRECT TESTIMONY IN THIS MATTER?

A. Yes.

II. PURPOSE

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The Purpose of my rebuttal testimony is to respond to matters raised in the direct testimonies of witnesses Mr. Michael J. McGarry Sr. on behalf of the Nebraska Public Advocate; Mr. John Harms on behalf of Nebraska Municipal Power Pool; and Mr. Andrew Bushra on behalf of Constellation NewEnergy.

III. RESPONSE TO THE DIRECT TESTIMONY OF MR. MCGARRY

Q. MR. MCGARRY ASSERTS THE NATURAL GAS FORECAST PRICES THE COMPANY USED ARE OVERSTATED OR HIGH.[1] IS THIS TRUE AND HOW DOES THIS IMPACT THE RECOMMENDATIONS YOU PROVIDED IN DIRECT TESTIMONY AND IN THE AETHER REPORT?

[1] McGarry Direct Testimony, Pages MJM-34-35.

A. No, the price forecasts used were not overstated. While Mr. McGarry does not question the use of the forecasts incorporated into the COSG Program, and used in Aether's modeling, he simply notes that the most recent gas price forecasts have been revised downward consistent with current information. As the Company has made clear in its direct testimony, under the COSG Program, when a property is presented to the Commission for consideration, the then most current long-term price forecasts will be used. In other words the price forecasts that Mr. McGarry is criticizing were simply the most current price forecasts available when the application was filed. Price forecasts change as new information becomes available and the early year prices will tend to reflect recent spot price trends. Spot natural gas prices have declined over the winter November 2015- March 2016.

The Base Case price forecast and the Illustrative Reserves price submitted in the filing illustrated the COSG Program mechanics. Company Witness Mr. Carr has explained in direct testimony that the most current price forecasts will be used to determine whether an investment meets the COSG Program criteria. Lower natural gas prices have created financial duress for a number of US natural gas producers. As spot market prices fall, so should the costs to acquire and produce natural gas properties. Therefore, the recent decline in market price will likely translate into an even better opportunity for the Company to acquire a long-term physical hedge for customers. Further, my direct testimony explains why it is much more likely that gas prices will increase over the term of the COSG Program than decrease. Mr. McGarry suggests the risk of Hedge Costs due to falling gas prices is high and that the possibility of Hedge Credits is unlikely. My direct testimony provides a number of reasons why this is not true, including that (a) companies have pulled back drilling that could replace current reserves at today's low gas prices, (b) it is likely that gas use for electrical generation will increase as coal is phased out as a fuel, and (c) LNG exports are expected to rise, decreasing available supply. Therefore, I continue to make the recommendations provided in prior direct testimony and in the Aether report.

IV. RESPONSE TO THE DIRECT TESTIMONY OF MR. HARMS

Q. MR. HARMS SUGGESTS THAT THERE ARE HEDGING RISKS ASSOCIATED WITH THE PROPOSED COST OF SERVICE GAS PROGRAM. DO YOU AGREE WITH HIS COMMENTS?

A. No. Mr. Harms raises several issues that are incorrect and should not be considered in an assessment of the COSG Program. My rebuttal testimony will address inaccuracies in Mr. Harm's direct testimony regarding the following issues: 1) utilities' interest in hedging through gas production; 2) the future direction of natural gas prices; 3) customer rate volatility and potential savings; 4) the correlation of production area market prices; 5) natural gas demand; 6) the time horizon for hedging; and 7) the use of other hedging tools.

Q. MR. HARMS TESTIFIES, "WHILE THERE ARE SEVERAL EXAMPLES OF THESE PROGRAMS, THESE TYPES OF PROGRAMS ARE NOT COMMON AND WOULD NOT TYPICALLY BE INCLUDED IN A DIVERSIFIED HEDGING PROGRAM."[2] HE GOES ON TO SAY THEY ARE "SPECULATIVE IN NATURE." DOES THIS ACCURATELY DESCRIBE CURRENT UTILITY STRATEGIES TO ACQUIRE GAS PRODUCTION?

A. No. The utility sector is continuously evolving. Although the acquisition of gas production is new within Nebraska, it is not new elsewhere. As described in the appendix of the Aether

[2] Harms Direct Testimony, Page 5, Lines 4-8.

Report, there are a number of utilities that have acquired gas reserves to hedge their customers' risks, including programs that have existed for over a decade. These include natural gas and electric investor-owned utilities and electric public power and municipal utilities. Acquiring a long-term physical hedge would be new for the Company, but it will have the benefit of the experience of a trusted advisor through its production affiliate, BHEP, which has years of gas and oil production experience. Therefore, the COSG Program is not "speculative in nature."

Q. MR. HARMS ASSERTS "THERE IS ALSO THE POSSIBILITY THAT EVEN AT TODAY'S HISTORICALLY LOW RESERVE ACQUISITION COST LEVELS THAT THE COST OF PRODUCING GAS FROM ACQUIRED RESERVES MAY EXCEED FUTURE MARKET PRICE LEVELS"[3]. HOW WOULD YOU RESPOND TO THIS?

A. While it is *possible* that prices will continue to stay at the recently unprecedented depressed price levels, it is highly unlikely. What Mr. Harms fails to note is there is much greater probability of prices rising as opposed to falling. The Aether Report includes many fundamental supply and demand reasons for why the price forecasts rise over time, pointing more to the likelihood of prices rising than falling.

Recently, market prices have fallen to low spot price levels because of large gas storage inventory and mild winter conditions reducing demand. Spot natural gas prices can fall below replacement cost levels for short periods of time. This is what we have seen occur in

[3] Harms Direct Testimony, Page 5, Lines 14-16.

latter part of 2015 and early 2016. And, even while spot market prices are below producers' full cost of production, producers continue to produce for cash flow reasons.

Market prices are likely to increase from the current low levels. LNG exports are starting in 2016 and exports to Mexico are forecasted to increase. More average seasonal weather patterns can quickly change inventory levels. Many producers will not be able to continue to operate much longer at current depressed prices. In a recent article, CNN Money[4] reported sixty-seven bankruptcies of oil and gas producers in 2015, compared to only fourteen in 2014 and fifteen in 2013, representing a 389% increase in bankruptcies year over year. And this trend may well continue into 2016. In recent weeks, credit rating agencies have downgraded a number of major independent natural gas producers. For example, in February 2016, Moody's downgraded a number of US exploration and production companies: three companies by one notch, two by two notches, two by three notches, and one down by four notches.[5] Many producers have cut their 2016 capital budgets to dramatically reduce new investment in drilling new wells. Furthermore, natural gas producers have not forward hedged a significant percent of 2016 and 2017 production, which will increase their exposure to current low market prices and add to existing financial pressures. In January 2016 energy industry consultant, IHS, announced that producers in

[4] February 11, 2016, http://money.cnn.com/2016/02/11/investing/oil-prices-bankruptcies-spike/.
[5] Moody's Investors Service. Rating Action: Moody's concludes review for 9 U.S. Baa-rated E&P Companies and 2 MLPs. Global Credit Research – 18 February 2016.

its study group have hedged just 18% of their natural gas production in 2016 and 7% in 2017.[6]

As noted in Mr. Benton's rebuttal testimony, these financial circumstances are why financially stable companies are taking advantage of current market conditions to acquire low priced reserves. Production from existing wells will decline naturally and as supply decreases, there will be upward pressure on prices until it becomes economically viable to drill new wells. By this mechanism, the market eventually corrects temporary periods of oversupply. Therefore, it is unlikely that prices will continue to fall.

Moreover, Mr. Harms did not provide any analysis of the risk-reward trade-off in his direct testimony. By contrast, Aether's analysis demonstrated that the Illustrative Reserves price compared to a range of low to high prices indicated relatively low opportunity cost and a great deal of potential risk mitigation. From current price levels, prices can only fall to shut-in price levels. However, forward market prices can rise to multiples of current price levels. In other words, the scale of the risk exposure to customers of not hedging is far more significant than the incremental benefit of not hedging if prices decline from current levels.

Given both the probability of prices rising and the scale of the risk this would present to customers, now is an ideal time to look for gas reserves that meet the COSG Program

[6] "North American Oil and Gas Companies Face Difficult Year in 2016 as Strong Hedging Protections Roll Off, IHS Says," January 29, 2016, http://press.ihs.com/press-release/energy-power-media/north-american-oil-and-gas-companies-face-difficult-year-2016-stron.

criteria. Even if prices stayed at these low levels, then the Company would acquire production at a time when market prices are low and the opportunity cost of the production would not be significant. If the Commission approves the Company's proposed COSG Program in this Phase I proceeding, then the Company will have the opportunity to present the Commission with a specific asset(s) to consider in a Phase II proceeding that satisfies the Acquisition Criteria using the then most current long-term price forecast.

Q. MR. HARMS' DIRECT TESTIMONY STATES THAT REDUCED VOLATILITY DOES NOT NECESSARILY EQUATE TO SAVINGS COMPARED TO THE MARKET.[7] WHAT IS TROUBLESOME ABOUT THIS STATEMENT?

A. In an attempt to discredit the COSG Program, Mr. Harms improperly combines two issues. On the one hand, Mr. Harms acknowledges that the COSG Program would likely reduce price volatility over the long-term as asserted by the Company. At the same time, Mr. Harms claims that reduced volatility does not necessarily equate to savings compared to market prices.[8] I agree with Mr. Harms that this is true, but he is confusing two issues for he fails to note that the COSG Program is in fact designed to achieve both. To understand these concepts, it is important to re-visit BHUH's stated gas supply objectives to: 1) provide reasonably priced natural gas; 2) provide a high level of reliability; and 3) mitigate price volatility.

In his direct testimony, Mr. Harms refers to market volatility. Volatility is a measure of the movement up and down in the market. A short-term hedged supply portfolio will reflect the volatility in the marketplace. This is because as the market price moves higher, once

[7] Harms Direct Testimony, Page 6, Lines 9-10.
[8] *Id*.

the short-term hedges expire, new forward hedges can only be executed in the higher priced market. Therefore, long-term rate stability cannot be achieved through successive short-term hedges, but can only be achieved through long-term hedging. More certainty about energy costs is valuable to customers, for they want to budget energy costs with some degree of confidence. If the COSG Program is approved, up to 50% of the gas supply could be hedged, thereby providing substantially more price stability. This is consistent with the third BHUH gas supply objective to "mitigate price volatility".

The first objective to "provide reasonably priced natural gas" is not the same as providing the cheapest available natural gas, but to provide gas supply at a reasonable price for customers. Consistent with this objective, it is anticipated that, over the life of the reserves, the production cost under the COSG Program will be lower than the base case market price forecast because it will be acquired and produced at cost (including only a utility-level cost of equity).

The objective will be for the Company to acquire gas supply at cost, so that it is *not betting* on the direction of future prices. No one can be 100% certain that the COSG gas supply cost will always be lower than the spot market during the entire life of the COSG Program. What can be determined is that the Phase II cost of production will be attractive for customers, compared to future price forecasts.

Q. PLEASE ADDRESS MR. HARMS' CONCERNS THAT THE COSG PROGRAM MIGHT PROVE TO BE AN INEFFICIENT METHOD OF HEDGING AGAINST FUTURE RATE INCREASES IF THE RESERVES SOLD INTO THE PIPELINE

SYSTEM DO NOT CORRELATE TO PRICE VOLATILITY WHERE PHYSICAL SUPPLY IS PURCHASED FOR DELIVERY INTO THE BHUH DISTRIBUTION SYSTEMS.[9]

A. The benefit to customers will come from gas produced at a lower cost relative to market prices. In the issue raised by Mr. Harms, the only negative scenario for customers would be if the market price in the production area decreased, while the market price at locations where the Company purchased gas, increased. This seems highly unlikely for two reasons. First, US natural gas prices are more likely to rise than fall in the future. Second, as Mr. Harms has stated himself, Nebraska benefits from closely-situated gas supply regions. Because of the highly interconnected regional pipeline grid, price differentials should not be material.

Q. MR. HARMS TESTIFIED "JUST AS THE ADDITION OF AN ADDITIONAL TRAFFIC LANE HELPS ALL DRIVERS ON A CONGESTED STRETCH OF ROAD, THE ADDITION OF EXTRA PIPELINE CAPACITY IN NEBRASKA HELPS ALL CONSUMERS. THIS MAY BE A BETTER USE OF LONG-TERM COST COMMITMENTS FROM CONSUMERS THAN COSG."[10] DO YOU AGREE?

A. Emphatically, no. The largest portion of gas supply price uncertainty relates to the underlying market price of natural gas, not the transportation costs to move gas from supply zones to market areas. As a result, acquiring gas transportation capacity is not a market price hedge. In fact, acquiring excess pipeline capacity in the form of firm transportation would be highly speculative.

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[9] Harms Direct Testimony, Page 9, Lines 1-5.
[10] Harms Direct Testimony, Page 9, Lines 17-20.

A hedge addresses a specific risk exposure in a portfolio. In the case of the COSG Program, the proposal is to address the long-term risk exposure for customers of market price increases. In contrast, acquiring excess gas transportation capacity would not be a hedge for customers. BHUH already has adequate gas transportation to ensure the Company can meet load reliably. Acquiring more would actually add risk for customers, since firm pipeline capacity often trades below contracted cost during off-peak periods. In this case, this would be adding significant cost for customers without a corresponding benefit. For this reason, typically utilities hold just enough firm transportation to ensure reliability.

Q. MR. HARMS CHALLENGED A RESERVE BASED HEDGING PROGRAM, POINTING TO RISK OF ALTERNATIVE POWER GENERATION SOURCES AND INCREASES IN ENERGY EFFICIENCY. DO YOU CONCUR?

A. No. While I agree that there will be additions to alternative energy and increases in energy efficiency, there is no evidence to support Mr. Harms' concern that "significant gas usage reduction within the BHUH distribution areas may result in a COSG hedging position that is significantly higher than the targeted 50% level." In fact, natural gas demand is more likely to grow than decline.

In its 2015 Annual Energy Outlook, the US Department of Energy's Energy Information Administration ("EIA") forecasted annual electricity demand growth of .8%/year in its Reference Case for the period of 2013 to 2040, where total electricity use was forecasted to increase from 3,836 billion kilowatt hours (billion kWh) in 2013 to 4,797 billion kWh in

2040.[11] EIA forecasted annual natural gas demand growth of .5%/year in its Reference Case for the period of 2013 to 2040, where total natural gas consumption was forecasted to increase from 26.16 trillion cubic feet (Tcf) in 2013 to 29.70 Tcf in 2040.[12]

Within the electricity sector analysis, renewable energy was forecasted to increase from 13% in 2013 to 18% of total electric generation by 2040 and natural gas fired generation was forecasted to increase from 27% in 2013 to 31% of total electric generation by 2040. The growth in renewable energy and natural gas-fired generation is due to significant coal plant retirements, which is described more fully in the Aether report.[13] This growth in gas demand is in part why Aether recommended long-term hedging for customers.

Even if there were events or trends that would cause natural gas demand to drop to half of current levels in Nebraska, these would most likely occur over a period of time. The benefit of the COSG Program is that it is not a fixed volume purchase commitment as a conventional market purchase would be, but a strategy to own proved producing properties (currently producing) and proved undeveloped reserves (that would be drilled to become producing properties). With the COSG Program, Drilling Plans can be adjusted every five years, or within each Drilling Plan period, for changing market conditions and demand requirements. See COSG Agreement Section 3.4.

Q. ARE THERE OTHER FINANCIAL TOOLS (SUCH AS FUTURES, OPTIONS, AND OTHER FINANCIAL DERIVATIVES) AVAILABLE TO BHUH TODAY?

[11] EIA, 2015 Annual Energy Outlook, Table A8. Total Electricity Supply, disposition, prices and emissions, Page A-18.
[12] EIA, 2015 Annual Energy Outlook, Table A13. Natural gas supply, disposition, and prices, Page A-27.
[13] Aether Report, Pages 82-84.

A. Yes, there are. BHUH currently employs these tools to manage short-term market price exposure. Witness Mr. Loomis described in his direct testimony how these would continue to be used in the future for short-term hedging, to supplement the COSG volumes. However, these tools are limited in term and cannot fill the need for long-term hedging.

Q. DID AETHER CONSIDER OTHER HEDGING INSTRUMENTS AND TIME HORIZONS IN ITS RECOMMENDATIONS?

A. Yes, these are described in the Aether Report. The primary instruments available to utilities to hedge medium-term and long-term outside of gas production are physical fixed price purchases and financial instruments such as a fixed for floating swap (also called a "fixed price swap").

Mr. Harms suggested up to a seven-year contractual term in his direct testimony, which poses several problems. The Aether Report describes the drawbacks of entering into long-term fixed price hedges (long-term is defined as 7 years and forward). First, there is little market liquidity outside the time horizon of one to three years forward. Second, counterparty default risk is much more significant for a contract that is seven times the size and seven times the length of a one-year contract. Mr. Harms fails to address either of these two significant risks in his direct testimony. Finally, a 7 year hedge is not comparable to the 20 year hedge offered by the COSG Program.

V. RESPONSE TO THE DIRECT TESTIMONY OF MR. BUSHRA

Q. IN MR. BUSHRA'S DIRECT TESTIMONY, HE STATES THE DIRECT TESTIMONY PROVIDED BY COMPANY WITNESSES USED A "CLAIMED

CONFIDENTIAL LONG-TERM FORECAST" AND "THE HIGH CASE PROVIDED BY EIA." IS THIS CORRECT?

A. No, this is not correct. The Base Case price that Aether used in its gas supply portfolio model was the arithmetic average of the EIA Reference case forecast and the base case forecast from a well-respected international energy company. The High Case EIA forecast was not used. The name and the forecast of the international energy company is confidential because BHUH has a subscription service with confidentiality provisions.

Both entities' forecasts have been submitted in prior data responses and are available to all parties who have agreed to treat the Company's information as confidential. To conduct the net present value calculation, Aether used the EIA's price forecast in nominal dollars.[14] Since the confidential forecast was available in only 2015 dollars, this forecast was converted to nominal dollars. The confidential version of the Aether report describes the methodology used to develop the nominal dollar forecast in <u>Part 4 – Portfolio Modeling</u>.[15] BHUH used the same Base Case price in Exhibit AC-2.

VI. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

[14] Typically, nominal dollars include the impacts of inflation over time whereas real dollars attempts to remove the impact of inflation.

[15] Aether Report, Pages 112- 119.